

which it resembles in some respects, in having area III of the proboscis provided with a broad band of 3 or 4 irregular rows of teeth, which almost meet those of area IV, instead of having a subcircular patch. Transformation of parapodia in epitokous females is at the 31st parapodium.

[*Nereis (Neanthes) linea* Treadwell] (Proc. U. S. Nat. Mus. **83**: 268-270, fig. 19, 1936) from China, U.S.N.M. no. 20115, is a *Perinereis*, identical with *P. aibuhitensis* (Grube).

[*Nereis (Neanthes) orientalis* Treadwell] (Proc. U. S. Nat. Mus. **83**: 270-272, fig. 19, 1937) from China, U.S.N.M. no. 20116, is identical with *Perinereis aibuhitensis* Grube. The type is a male heteronereid.

[*Nereis paucidentata* Moore] (Proc. Acad. Nat. Sci. Philadelphia, pp. 430-431, pl. 24, figs. 28-30, 1903) from Alaska, U.S.N.M. no. 15709, is a *Ceratonereis*.

[*Nereis pusilla* Moore] (Proc. Acad. Nat. Sci. Philadelphia, pp. 428-429, pl. 24, figs. 25-27, 1903) from Japan, U.S.N.M. no. 15734, is a *Ceratonereis*. The specific name has been previously used by Bosc in 1802, and by Langerhans in 1879. Neither of these, belongs to the genus *Ceratonereis*, thus a change of name is unnecessary.

*Perinereis aibuhitensis* Grube (Mem. Acad. Sci. St. Petersburg **25**: 89-90, pl. 5, fig. 3, 1878) from the Philippine Islands, includes *Nereis linea* and *Nereis orientalis*, both from China.

*Perinereis caeruleis*, n. comb., for *Heteronereis caeruleis* Hoagland.

[*Platynereis integer* Treadwell] (Bull. Mus. Nat. Hist. **100**: 595-597, figs. 1-4, 1920) from the Philippine Islands, U.S.N.M. no. 18939, is identical with *Pl. polyscalma* Chamberlin (*vide* Monro, in Scientific Reports, **4**: 18, 1931, and Fauvel, in Voy. Indes orient. Néerlandaises, p. 23, 1931).

*Platynereis polyscalma* Chamberlin (Mem. Mus. Harvard **48**: 219) from the Gilbert Islands, U.S.N.M. no. 19449, includes *Pl. integer*.

[*Pseudonereis atopodon* Chamberlin] (Mem. Mus. Harvard **48**: 228, pl. 35, figs. 3-5, 1919) from the Tonga Islands, U.S.N.M. no. 19467, is identical with *P. palpata*.

*Pseudonereis palpata*, n. comb., for *Neanthes palpata* Treadwell, includes *Nereis disparsetosa* Treadwell and *Pseudonereis atopodon* Chamberlin.

*Uncinereis agassizi* (Ehlers) (Die Borstenwürmer, pp. 542-546, p. 23, fig. 1) from the Gulf of Georgia, British Columbia and Mendocino, California, includes *U. subita* Chamberlin.

[*Uncinereis subita* Chamberlin] (Mem. Mus. Harvard, **48**: 215-219, pl. 30, figs. 1-4, 1919) from California, U.S.N.M. no. 19495, is identical with *U. agassizi* (Ehlers).

ZOOLOGY.—*Three new species of the amphipod genus Ampithoe from the west coast of America.*<sup>1</sup> CLARENCE R. SHOEMAKER, U. S. National Museum. (Communicated by WALDO L. SCHMITT.)

When examining collections of Amphipoda from the west coast of America from time to time, I have noted several specimens of *Am-*

<sup>1</sup> Published by permission of the Secretary of the Smithsonian Institution. Received November 4, 1937.

*pithoe* which did not appear to belong to any of the species with which I was familiar. After studying the literature of this genus, I have concluded that at least three new species are represented in the material. These new species, the descriptions of which follow, are *Ampithoe plumulosa* represented from Ecuador, Lower California, California, and British Columbia; *Ampithoe dalli* from Alaska, Bering Island, British Columbia, and Puget Sound; and *Ampithoe rubricatoides* from the Aleutian Islands and the Pribilof Islands, Alaska.

#### Family AMPITHOIDAE

##### *Ampithoe plumulosa*, n. sp.

Fig. 1

*Description of male.*—Head with lateral lobes prominent, rectangular, corners evenly rounding. Eye rather small, oval, black. Antenna 1 longer than antenna 2, and over two-thirds the length of the body; first peduncular joint equal in length to the second, which is over three times the length of the third; flagellum over twice as long as the peduncle and composed of about forty-eight joints. Antenna 2 much stouter than antenna 1; fifth joint a little shorter than fourth; flagellum a little longer than fourth joint and composed of about twenty-eight joints; the anterior two-thirds of the lower margin of the fifth joint and the flagellum densely clothed with long plumose setae. Right mandible with six spines in spine-row; palp well developed, third joint shorter than second and very little, if at all, expanded distally, the obliquely rounding distal end bearing long curved setae. Maxilla 1, inner plate very short, conical, and bearing four setae on the outer margin, outer plate armed with ten spine-teeth. Maxilla 2 normal and as figured by Sars for *A. rubicata*. Maxillipeds, inner plate reaching beyond the base of the first joint of the palp, outer plate reaching to the end of the second joint of the palp. Lower lip very much as figured by Sars for *A. rubicata*.

Gnathopod 1 with side-plate produced far forward; second joint bearing a forward-pointing lobe on the outside distal corner; third joint with lobe on the inside front margin; fifth joint about four-fifths as long as the sixth with the hind margin produced into a shallow lobe; sixth joint with margins parallel, palm oblique, broadly and evenly rounding and defined by a spine; seventh joint greatly overlapping palm and finely serrate on inner margin. Gnathopod 2, second joint with outside distal corner produced into a forward-pointing lobe; third joint with inside front margin produced into a lobe; fifth joint about half the length of the sixth joint; sixth joint large and powerful, palm slightly oblique, central portion in old males occupied by a long, flat tooth, but in younger males evenly convex; seventh joint strongly curved so that when closed the apex meets the rather blunt defining angle of the palm. Peraeopods 1 and 2 alike except that 1 is slightly the longer; second joint somewhat expanded; fourth joint slightly expanded and slightly produced distally. Third peraeopod as represented by Fig. 1 m. Peraeopods 4 and 5 alike, but 5 a little the longer; second joint moderately expanded with hind margin produced below into a short, downward-pointing lobe; sixth joint with three or four stout spines on the lower hind margin, and a pair of smaller spines nearer the seventh joint. The seventh thoracic segment bears ventrally a median, forward-directed, translucent, lamellar, oval keel armed with marginal teeth, those on the anterior half pointing

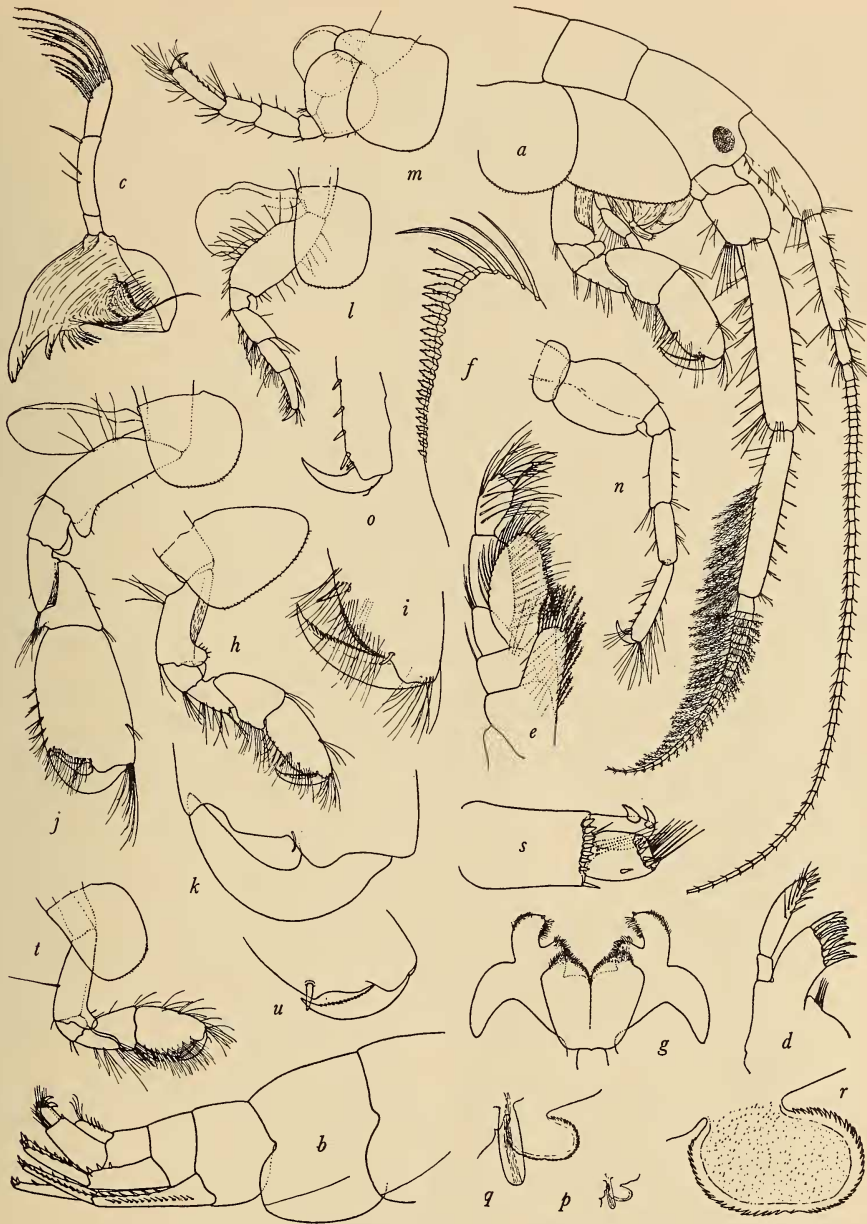


Fig. 1.—*Ampithoe plumulosa* n. sp., male. *a*, anterior end of animal; *b*, posterior end of animal; *c*, mandible; *d*, maxilla 1; *e*, maxilliped; *f*, outer plate of maxilliped, enlarged; *g*, lower lip; *h*, gnathopod 1; *i*, end of gnathopod 1, enlarged; *j*, gnathopod 2; *k*, end of gnathopod 2 of fully developed male, enlarged; *l*, peraeopod 1; *m*, peraeopod 3; *n*, peraeopod 4; *o*, end of peraeopod 4, enlarged; *p*, ventral, oval keel of seventh thoracic segment, drawn on the same scale as the peraeopods; *q*, keel on larger scale showing its situation in reference to the male genital organ; *r*, keel greatly enlarged showing the marginal teeth; *s*, uropod 3; *t*, gnathopod 2, ♀; *u*, end of same, enlarged.

forward and those on the posterior half pointing backward. The penes are prominent and are situated on either side of this keel.

Third abdominal segment with lower postero-lateral margin broadly and evenly rounding and lower postero-lateral angle scarcely perceptible. Uropods 1 and 2 extending back the same distance, but not as far as uropod 3. Uropod 1, distal half of upper margin of peduncle armed with spines, and a row of fine spines or setae on outer surface; outer margin of outer ramus closely set with spines. Uropod 2, distal half of outer margin of peduncle armed with three spines. Uropod 3, peduncle extending farther back than telson and without marginal spines, but bearing a row of short spines at the upper distal edge. Telson a little broader than long, sides converging to the rather narrow, slightly excavate apex. Length of animal about 16 mm.

*Type*.—A mature male taken from a tide pool at La Jolla, California, by Dr. Waldo L. Schmitt, Sept. 20, 1918, U. S. Nat. Mus. cat. no. 71443.

The female is much like the male except in the following characters. Side-plate 1 is not produced so far forward. Gnathopod 1 is like that of the male except there is no lobe on the third joint. Gnathopod 2 very slightly larger than gnathopod 1; third joint without lobe; sixth joint one-third longer than fifth, palm formed by an oblique compound curve which ends in a blunt defining angle below which is a stout spine; seventh joint slightly overlapping palm and bearing fine serrations on inner margin. The keel on the ventral surface of the seventh thoracic segment is not so prominently developed as in the male, and in some specimens is reduced to a low ridge.

The first specimens of this species were taken by Dr. Wm. H. Dall at Catalina Harbor, Catalina Island, California, in 1874.

The specific name *plumulosa* is given in reference to the prominent plumose setae on the distal portion of the second antennae.

Specimens from the following localities are in the national collection: Salinas, Ecuador, September 12, 1926, Dr. Waldo L. Schmitt, collector, 4 specimens.

La Libertad, Ecuador, January 19, 1933, Dr. Waldo L. Schmitt, collector, 1 specimen.

La Ensenada, Lower California, November 28, 1936, low tide, Steve A. Glassell, collector, 7 specimens.

\**Velero III* Sta. 639, San Lorenzo Channel, Espiritu Santo Island, Lower California, March 7, 1937, 3–5 fathoms, sandy coralline algae, Hancock Pacific Expeditions 1937, 4 specimens.

\**Velero III* Sta. 683, outside Concepcion Bay, Lower California, March 15, 1937, 12 fathoms, corallines, Hancock Pacific Expeditions, 1937. 1 specimen.

\**Velero III* Sta. 706, Puerto Refugio, Angel de la Guardia, Lower California, March 20, 1937, 8–10 fathoms, *Ulva*, Hancock Pacific Expeditions, 1937, 1 specimen.

\**Velero III* Sta. 731, Tiburon Island, Gulf of California, March 28, 1937, 12 fathoms, Hancock Pacific Expeditions, 1937, 7 specimens.

San Diego, California, May 29, 1927, Wilbur Reed and Leroy Arnold, collectors, 1 specimen.

La Jolla, California, tide pools, September 1918, Dr. Waldo L. Schmitt, collector, 15 specimens, and 25 specimens received from the Scripps Institution.

\* Published by permission of Captain G. Allan Hancock.

Corona Del Mar, California, January 31 to March 3, 1933, Mr. G. E. MacGinitie, collector, 1 specimen.

Newport Bay, California, November 15, 1933, Mr. G. E. MacGinitie, collector, 2 specimens, and July 14, 1935, 35 specimens.

Off Balboa, California, November 25, 1932, Mr. G. E. MacGinitie, collector, 1 specimen.

Long Beach, California, September 26, 1925, University of Southern California, 16 fathoms, 1 specimen.

Catalina Island, California, 1874, Dr. Wm. H. Dall, collector, 3 specimens, and 5 specimens collected by W. A. Hilton, Aug. 24, 1918.

Patos Island, Strait of Georgia, British Columbia, April 23, 1921. 3 specimens.

*Ampithoe dalli* n. sp.

Fig. 2

*Description of male.*—Head with lateral lobes prominent and rectangular, corners evenly rounding. Eyes rather small, circular, black. Antenna 1 shorter than antenna 2, which is about one-half the length of the body; peduncle extending very nearly to the end of the fourth joint of antenna 2; second joint a little shorter than the first and a little over twice the length of the third; flagellum composed of about thirty joints. Antenna 2 rather robust; fourth and fifth joints about equal in length; flagellum composed of about eighteen joints and equal in length to the fourth and fifth peduncular joints combined. Mandible with rather stout palp; second joint shorter than the third; third expanding distally and with the obliquely truncate upper margin bearing the usual long curved spines. Maxilla 1 with small conical inner plate bearing one lateral seta; outer plate bearing ten serrate spine-teeth; palp with distal end rounding and bearing five straight spines below which are two slender setae. Maxilla 2, inner plate much narrower than outer. Maxilliped with inner plate rather short, bearing distally and on the inner margin long, slender setae, and at the inner distal corner a stout spine; outer plate reaching perhaps a little beyond the second joint of the palp and broadest a little beyond the middle, upper third of outer margin with curved spines, inner margin bearing the usual serrate spine-teeth; palp rather short and strong, first and second joints about equal in length, the third joint is a little shorter than first or second.

Side-plate 1 produced forward, but not so much so as in *A. plumulosa*. Gnathopod 1, second joint rather short and robust and with distal anterior corner produced into a lobe; third joint short, without anterior lobe; fourth joint with lower distal margin somewhat produced; fifth joint shorter than sixth, lower margin extended downward into a shallow lobe which is not at all produced forward; sixth joint with the oblique, slightly convex palm merging into the hind margin by an evenly rounding curve, palm defined by a stout spine; seventh joint fitting palm, but the apex extending beyond the defining spine. The inside surface and lower margin of all the joints, except the sixth and seventh, of gnathopod 1 are densely clothed in long plumose setae. Side-plate 2 about as deep as side-plate 1 and much longer than deep. Gnathopod 2, second joint shorter than sixth and with lower anterior corner produced downward into a prominent lobe; fourth joint rectangular; fifth joint short, lower part narrowly produced between fourth and sixth, a low protuberance on upper proximal margin; sixth joint strong and robust, front and hind margins divergent, front margin slightly convex and twice the length of the hind margin which is continued distally into a



Fig. 2.—*Amphihoe dalli* n. sp., male. a, anterior half of animal; b, posterior half of animal; c, mandible; d, maxilla 1, e, maxilla 2; f, maxilliped; g, end of pereopod 1, enlarged; h, pereopod 3; i, j, pereopods 4 and 5, drawn on a smaller scale than pereopod 3; k, telson; l, gnathopod 2, ♀; m, end of same, enlarged.

forward-pointing tooth; palm very oblique and passing by an uneven concave curve from a prominent tooth near the dactyl hinge to the distal tooth of the hind margin. Seventh joint strong and very much curved, the apex meeting the palm some distance short of the tooth of the hind margin. Side-plates 3 to 5 much deeper than the two preceding and increasing slightly in depth from the third to the fifth, lower margins evenly rounding. Peraeopods 1 and 2 subequal in length; second and fourth joints only moderately expanded. Peraeopod 3, second joint longer than broad with hind margin produced into a rather flat lobe whose margin is slightly concave on the lower half; sixth joint bearing on the hind margin five stout spines which increase in length toward the seventh joint, which is strong and much curved. Peraeopods 4 and 5 much alike, rather short, but 5 slightly the longer; second joint very moderately expanded; sixth joint bearing five or six stout spines on front margin; seventh joint strong and much curved.

Pleon segments 1 to 3 with lower margins evenly rounding and no apparent lower postero-lateral angle on the third. Uropods rather short and stout. Uropod 1 reaching back only very slightly farther than 2; peduncle with very few spines on the upper inner and outer margins, and a few groups of fine spines or setae on the lower outer margin; rami with a few short spines on upper edges. Uropod 2 with rami much shorter than peduncle; upper outer edge of peduncle bearing three spines; rami bearing a few short spines on their upper edges. Uropod 3 extending back a little farther than 2; peduncle nearly twice as long as the rami and bearing no spines on the upper surface except the transverse distal row; the outer ramus bearing, besides the two terminal upward-pointing spines a group of slender spines on the central area of the upper surface. Telson about two-thirds the length of the peduncle of uropod 3, broadly triangular, with the sides, each of which bears a row of upward-pointing spines and two plumose setae, converging to a narrowly rounded apex bordered on either side by a hooked spine and a long slender spine. Length of male 15 mm.

*Type*.—A mature male taken by the steamer *Albatross*, June 24, 1914, at Yakutat Bay, Alaska, U. S. Nat. Mus. cat. no. 73274.

The species is named in honor of Dr. Wm. H. Dall, who collected the first specimens in 1873 in Kyska Harbor, Kyska Island, Alaska.

The female is like the male except in the first few side-plates and the gnathopods. Side-plates 1 and 2 are not longer than deep, as they are in the male, and side-plate 1 is not produced forward as much as in the opposite sex. Gnathopod 2 is very slightly larger and stronger than gnathopod 1, which is like that of the male, but without the plumose setae; sixth joint like that of gnathopod 1 except the palm is not evenly convex and does not merge into the hind margin by an evenly rounding curve, but is defined by a blunt rounding angle. Length of female 15 mm.

Specimens from the following localities are in the national collection:

Kyska Harbor, Kyska Island, Aleutian Islands, Alaska, 1873, beach, Wm.

H. Dall, collector, 2 female specimens.

Lissonkovaya Bay, Bering Island, August 22, 1882, L. Stejneger, no. 1491, 1 female specimen.

Unalaska Island, Aleutian Islands, Alaska, May 26, 1906, taken by the steamer *Albatross*, 4 female specimens.

Attu Island, Aleutian Islands, Alaska, shore, June 10-11, 1906, taken by the steamer *Albatross*, 2 male specimens.

Adakh Island, Aleutian Islands, 1 male and 1 female specimen.

Ucluclet, British Columbia, May 19, 1909, John Macoun, collector, no. 9, 4 specimens, male and female; and no. 10, 1 male specimen.

Observation Island, Alaska, June 27, 1914, taken by the steamer *Albatross*, 3 specimens.

Neah Bay, Puget Sound, April 27, 1914, taken by the steamer *Albatross*, 1 male specimen.

Yakutat Bay, Alaska, June 24, 1914, taken by the steamer *Albatross*, 1 male specimen.

Friday Harbor, Puget Sound, in eel grass. August 5, 1928, Mr. K. L. Hobbs, collector, 25 specimens, male and female.

False Bay, Puget Sound, August 12, 1928, Mr. K. L. Hobbs, collector, 1 female specimen.

*Ampithoe rubricatoides* n. sp.

Figs. 3, 4

*Description of male.*—Head, lateral angle with upper front corner broadly rounding, lower corner scarcely perceptible, front of lobe passing by an almost straight line into the lower front margin of head; eye small, round, very pale in alcohol, and about the same color as the rest of the head. Antenna 1 apparently a little shorter than antenna 2; second peduncular joint a little shorter than first and a little over twice as long as third; flagellum a little shorter than peduncle and composed of about twenty joints. Antenna 2, fourth joint a little longer than fifth; flagellum equal to or a little longer than the fourth and fifth joints combined and composed of about fourteen joints; the lower margin of the fifth peduncular joint and the lower margin of the flagellum bearing conspicuous groups of setae. Mandible with small tooth on anterior edge of triturating surface of molar and a racket-like spine and a simple spine on the upper corner, a very conspicuous grooved prominence near the base of the palp; six spines in spine-row; palp rather short and stout, second joint about half the length of the third, the upper edge of which is very obliquely truncate. Maxilla 1, inner plate with one marginal seta; outer plate with ten simple, curved spine-teeth; rounding apex of palp bearing five slender spines and upper inside margin with five or six longer spines, Maxilla 2, outer plate not much wider than inner; apex and upper half of inner margin of outer plate with long spines; apex and entire inner edge of inner plate with long spines. Maxilliped very much like that of *A. dalli*, inner plate extending a little beyond the base of the first palp joint, apex rounding, with no apical teeth, but apex and inner margin bearing long spines; outer plate extending a little beyond the end of the second palp joint, upper half of outside margin and rounding apex armed with long curved spines, inner margin with the usual spine-teeth, which do not appear to be serrate; palp short and stout.

Side-plate 1 produced moderately forward. Gnathopod 1, second joint bearing forward-pointing lobe on the lower front corner; fifth joint over half the length of the sixth; sixth joint widest through the middle; palm very oblique, defined by a spine and passing by a scarcely perceptible angle into the hind margin, both palm and hind margin of sixth joint bearing conspicuous setae; seventh joint fitting palm, but slightly overlapping it. Gnathopod 2 much resembling gnathopod 1 but larger and stronger, and the lower front lobe of the second joint is less produced; sixth joint stout and strong, widest through the middle, palm oblique, concave, and forming a blunt angle with the hind margin, a submarginal palmar spine on inside surface of joint just before the defining angle; seventh joint strong, moder-



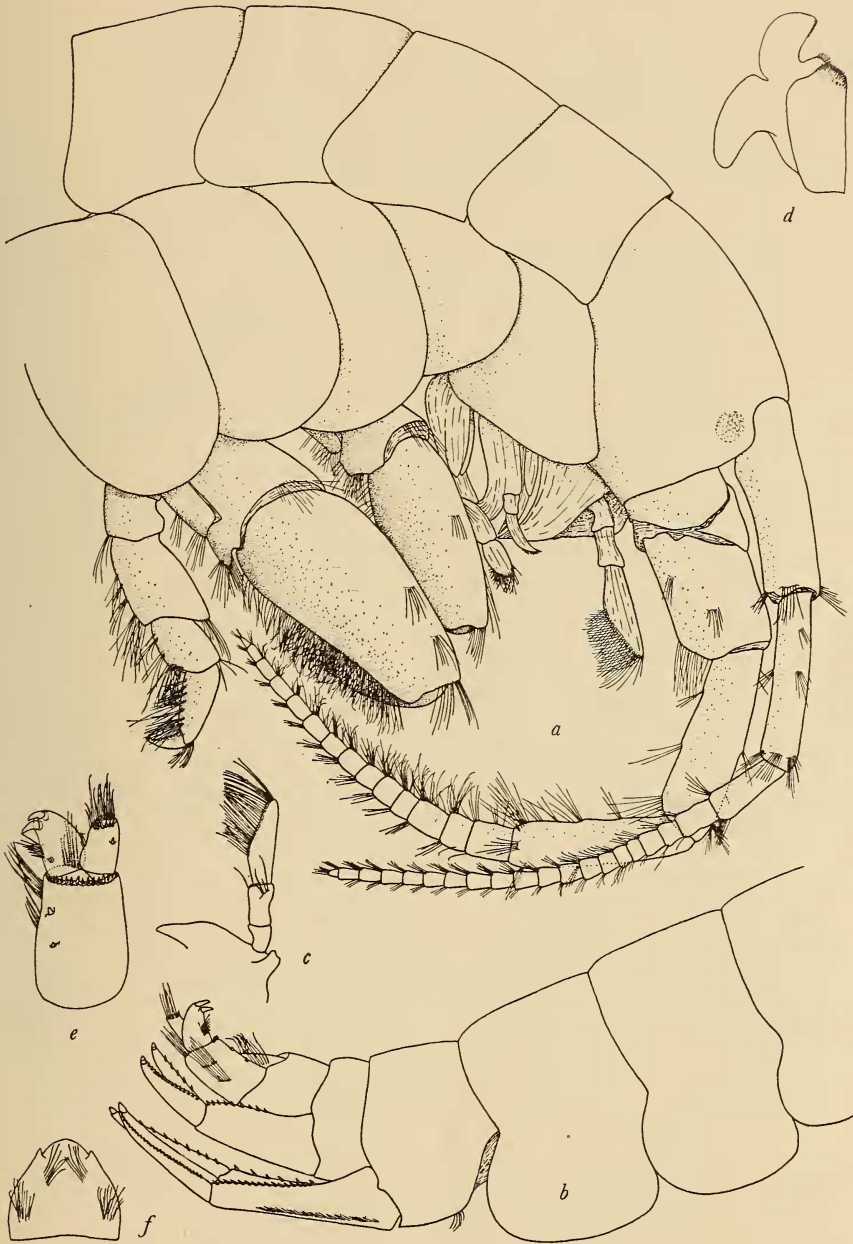


Fig. 3.—*Ampithoe rubricatoides* n. sp., male. *a*, anterior end of animal; *b*, posterior end of animal; *c*, mandible; *d*, lower lip; *e*, uropod 3, enlarged; *f*, telson.

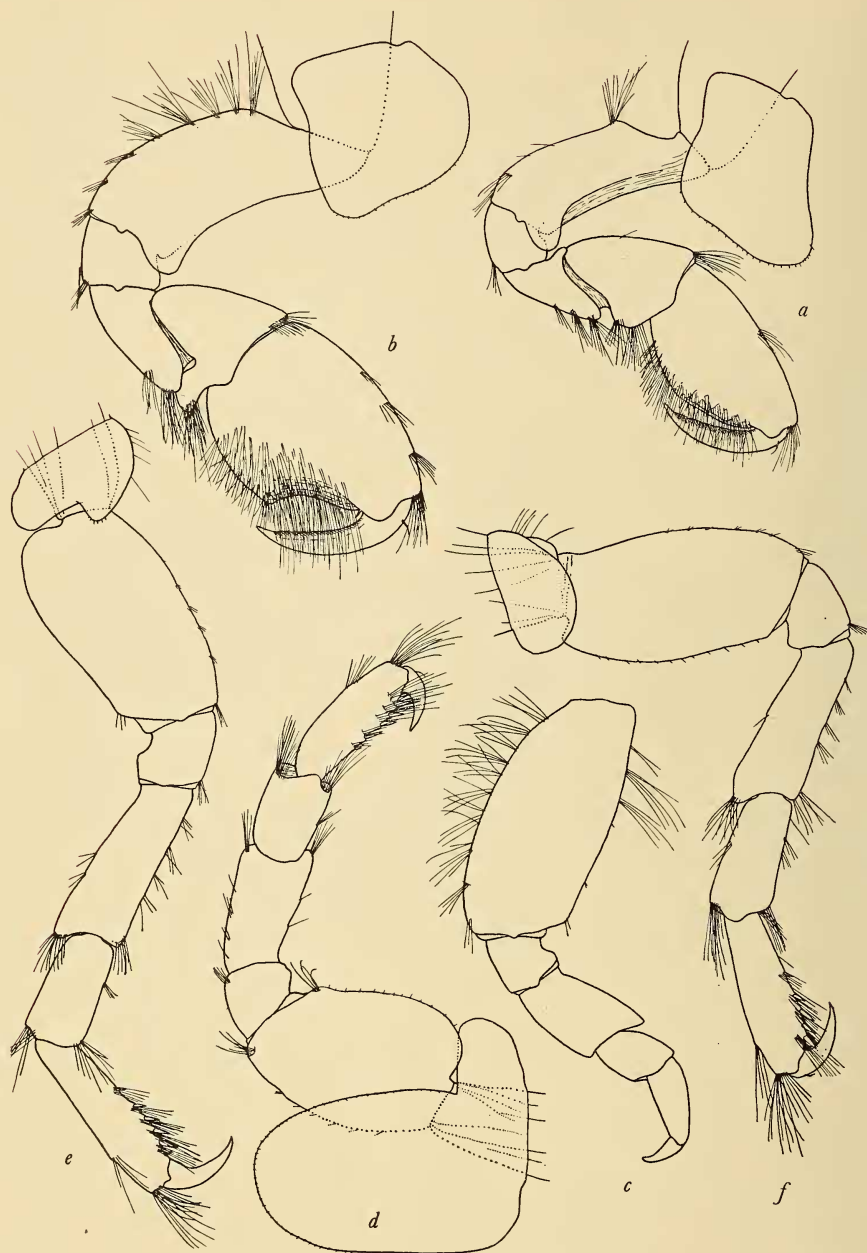


Fig. 4.—*Ampithoe rubricatoides* n. sp., male. a, gnathopod 1; b, gnathopod 2; c, pereopod 1; d, pereopod 3; e, pereopod 4; f, pereopod 5.

ately curved, not fitting palm when closed, but apex resting on the inside of sixth joint against the submarginal spine; the palm and lower surface of sixth joint conspicuously setose. Peraeopods 1 and 2 subequal in length, second joint moderately expanded; fourth joint moderately expanded with lower front corner produced slightly downward. Peraeopod 3, second joint longer than wide and widest across upper third; sixth joint armed on hind margin with about five stout spines. Peraeopods 4 and 5 very much alike, but 4 a little the longer, second joint moderately expanded; sixth slightly expanded distally and armed on hind margin with five stout spines; seventh joint strong and much curved.

Pleon segments 1 to 3, lower postero-lateral margins merging into lower margins by a broad evenly rounding curve. Uropod 1 reaching back a little farther than 2, rami about two-thirds the length of the peduncle, peduncle with the distal two-thirds of the upper outer edge furnished with a row of short closely-set spines, while the spines on the upper inner edge are set farther apart, lower outer edge provided with a row of fine setae; outer edge of outer ramus with fine closely-set spines throughout, inner edge apparently without spines; inner edge of inner ramus with spines set farther apart than those of outer ramus, the opposite edge apparently without spines. Uropod 2, rami about three-fourths the length of the peduncle; the distal half of upper, outer edge furnished with short closely-set spines; armature of rami the same as in uropod 1. Uropod 3 extending back very little beyond 2, rami a little over half the length of the peduncle, which bears two very short spines on the upper surface, and a row of very short closely-set spines on the upper distal margin, outer side of peduncle with two groups of slender setae; outer ramus with the usual uncinata distal spines, a very short spine near the proximal margin of upper surface, and a group of setae on the outer surface; inner ramus bearing apically a transverse row of very short spines and a row of long slender setae. Telson as broad as long, and about reaching the end of uropod 3, sides converging by a convex curve to a narrowly rounding apex which is bordered on either side by a short blunt tooth or spine, upper surface with a group of setae proximally on either side and a group of setae distally nearer the center. Length of male 24 mm.

*Type*.—A mature male from Kyska Harbor, Kyska Island, Aleutian Islands, taken in 1873 by Dr. Wm. H. Dall, 10 fathoms, U. S. Nat. Mus. cat. no. 74661.

The female is very much like the male in general appearance. Gnathopod 1 like that of the male. Gnathopod 2 very little larger than 1 and closely resembling it in form, but the palm is obliquely straight and not concave. The armature of uropods is the same as in the male. The females which I have seen are considerably smaller than the largest males, but these specimens may not have attained their greatest development.

There are in the collection of the U. S. National Museum the following specimens:

Kyska Harbor, Kyska Island, Aleutian Islands, Alaska, 1873, 9–12 fathoms, sandy, mud, collected by Dr. Wm. H. Dall, no. 164 (1001), 3 specimens.

Kyska Harbor, Kyska Island, Aleutian Islands, Alaska, in pass, 1873, 10 fathoms, collected by Dr. Wm. H. Dall, nos. 234 (1035), 235 (1036), and 236 (1037), 4 specimens.

Saint Paul, Pribilof Islands, Alaska, July 24, 1874, 6–9 fathoms, sand, collected by Dr. Wm. H. Dall, no. 721 (1163), 4 specimens.